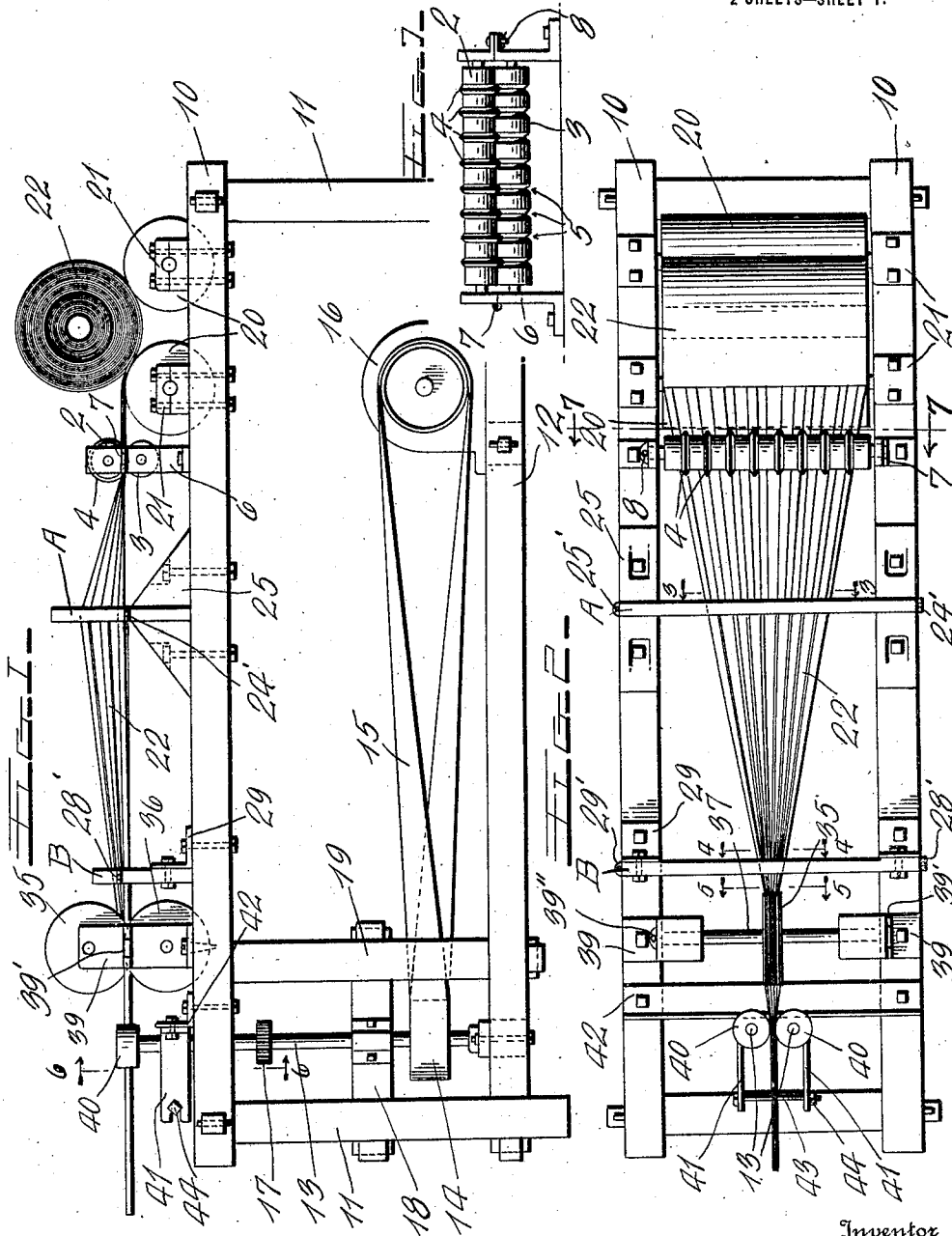


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CLOTH PLAITING MACHINE.
APPLICATION FILED FEB. 23, 1921.

1,402,584.

Patented Jan. 3, 1922.
2 SHEETS—SHEET 1.



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FIG. 3

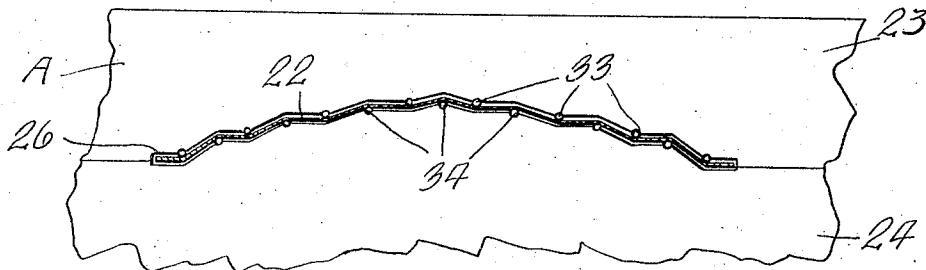
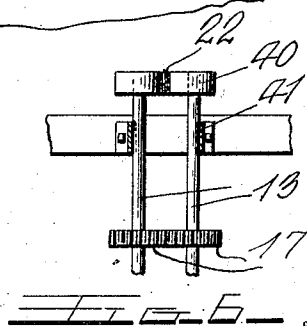
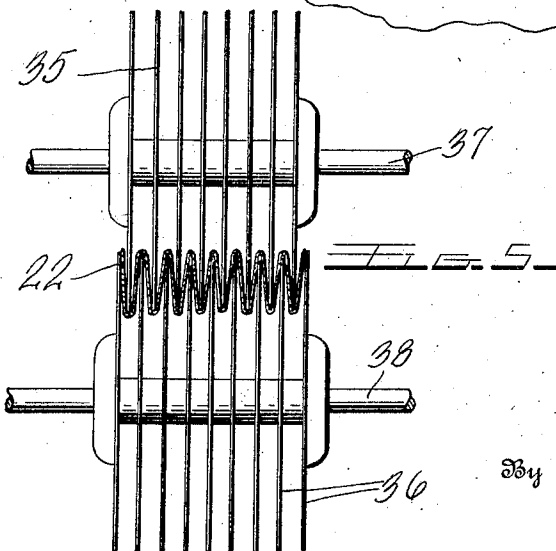
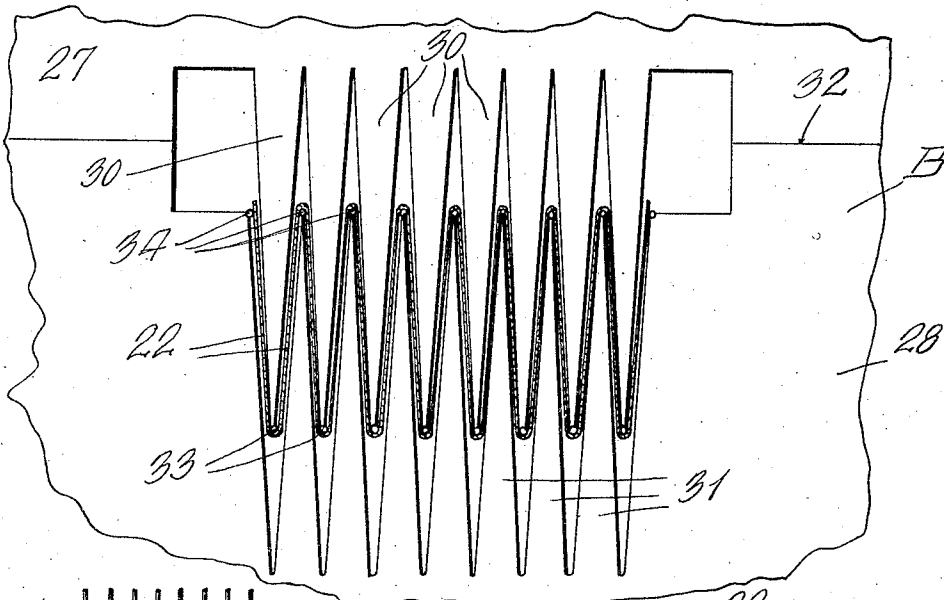


FIG. 4



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HENRY E. ELROD, OF DALLAS, TEXAS.

CLOTH-PLAITING MACHINE.

1,402,584.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY E. ELROD, a citizen of the United States, and a resident of the city of Dallas, county of Dallas, and State of Texas, have invented certain new and useful Improvements in Cloth-Plaiting Machines, of which the following is a specification.

My invention relates to cloth plaiting machines and more particularly to machines adapted to plaiting cloth longitudinally thereof or the length of the roll of cloth.

In carrying out my invention, the plaited cloth is passed between two rubber rolls under pressure, thereby imparting to the plaits in the cloth the final creasing. These pressure rolls are driven at a constant speed and act as feeding or pulling rolls for driving the cloth through the machine. It is essential, therefore, that each longitudinal or warp thread be under the same tension in order that the cloth will be pulled through the machine evenly.

Therefore, one of the essential features of my improved machine is that of providing means for conveying the cloth through the machine evenly and with a uniform longitudinal tension. In consequence of this the plaiting of the cloth is accomplished uniformly and the plaits are disposed evenly the entire width of the cloth and parallel throughout its length.

In carrying out my invention, I provide a frame upon which are mounted in longitudinal alignment two guide boards through which the cloth to be plaited is adapted to pass. Connecting the two guide boards are a multiplicity of supporting wires which engage the cloth and preliminarily fold the same. As the cloth leaves the second guide board it is engaged by two sets of intermeshing discs which compact the folds formed by the guide boards. From these discs the cloth is conducted between the pressure rollers which in addition to feeding the cloth through the machine, impart to the folds the final creasing operation, thereby forming permanent plaits in the cloth.

The various features of my invention and the details of structure will be made more apparent in the accompanying specification and drawings in which:

Fig. 1 is a side elevation of a machine constructed in accordance with my invention,

Fig. 2 is a top plan view of the structure illustrated in Fig. 1,

Fig. 3 is a detailed sectional view taken on line 3—3 of Fig. 2,

Fig. 4 is a similar sectional view taken on line 4—4 of Fig. 2, somewhat enlarged. 60

Fig. 5 is a section taken on line 5—5 of Fig. 2,

Fig. 6 is a section on line 6—6 of Fig. 1, and

Fig. 7 is a section taken on line 7—7 of Fig. 2. 65

The frame of the machine is provided with suitable support 10, supporting members 11 and a base 12. Disposed vertically of the frame and at one end thereof are a pair of shafts 13 journaled upon the frame 10 and base 12. The upper end of the shafts 13 project above the table for a purpose to be more fully hereinafter described. One of the shafts carries a pulley 14 which is engaged by a belt 15 and through which connection is made with a motor 16 supported on the base 12. The shafts 13 are each provided with a pinion gear 17 which intermesh, thereby causing the two shafts 13 to be rotated at the same ratio and in opposite directions. For supporting the shafts 13 intermediate their length, I provide a bracket member 18 secured at one of its ends to a vertically disposed support 19 and at its other end to one of the legs 11. 80

Disposed transversely of the supporting frame 10 and at one end thereof are a pair of supporting drums 20 journaled in suitable bearings 21. These drums 20 are adapted to support a roll of cloth 22 to be plaited. 85

Disposed immediately adjacent the supporting drums 20 is a pair of creasing rolls 2 and 3, the upper roll 2 being provided with V-shaped ribs 4, while the bottom roll 3 has formed therein correspondingly shaped grooves 5. The rolls are mounted in brackets 6, the upper portion of one of the brackets being hinged as indicated at 7 to permit the upper roll to be swung away from the lower roll to facilitate the threading of the cloth through these rolls. The remaining bracket is provided with any suitable type of fastening means 8 for locking the upper and lower sections of the bracket together. 105

Also disposed transversely of the supporting frame 10 and spaced apart, are guide boards A and B. The details of the guide board A will be described first and attention is directed particularly to Figs. 110

1 to 3. This guide board is formed in sections 23 and 24 hinged at one end as indicated at 24' and supported in a vertical position upon the frame 10 by suitable brackets 5 25 disposed at the edge of the supporting frame. The ends of the sections opposite from the hinge are provided with a suitable locking means 25' for securing the sections in closed position. Any suitable type of 10 locking means may be provided, such for instance, as indicated at 8 for the creasing rolls. The adjacent edges of the sections 23 and 24 of the guide board A are shaped as 15 illustrated clearly in Fig. 3 and when in position, form a serpentine or irregular passage-way or slot 26 between the two through which the cloth 22 is adapted to pass.

The guide board B comprises an upper and lower section 27 and 28 respectively, 20 hingedly connected at one end thereof as indicated at 28', and this guide board B is supported on the frame by suitable brackets 29. The other ends of the sections are provided with suitable locking means 29', such 25 for instance, as illustrated in Fig. 7 for the creasing rolls. An irregular or serpentine slot is formed by the sections of the guide board B by providing the adjacent edges with a multiplicity of tapering projections 30 and 31 respectively which interengage 30 with one another as clearly illustrated in Fig. 4. The extent of this inter-engagement of the projections 30 and 31 is limited by the straight edges 32 of the sections 27 and 28 35 which abut to properly position the projections 30 and 31 with respect to each other.

For supporting the cloth 22 between the guide boards A and B and for retaining the folds in the cloth there are provided a 40 multiplicity of supporting wires 33 and 34, the ends of these wires are fastened in the guide boards A and B, the set of wires 33 having their ends secured in the top sections of the guide boards while the set 34 45 have their ends anchored in the lower sections of the guide boards. These wires are disposed at the points of the guide boards which form the crease or folds in the cloth and the wires will therefore converge from 50 the guide board A toward the guide board B as will be clearly apparent.

Mounted adjacent the guide board B are two sets of disks 35 and 36 mounted on 55 transversely disposed shafts 37 and 38 respectively. These shafts are journaled in suitable supports 39 disposed at each side of the supporting frame. One of the supports is hinged as illustrated at 39' while the other support is provided with suitable locking 60 means 39''. A detailed view of these disks is shown in Figure 5, the distance between them, however, being slightly exaggerated for sake of clearness. The sets of disks are so arranged that their peripheries 65 intermesh a distance equal to the width of

the plaits. These discs act in the nature of compacting discs for the folds so as to condense the transverse width of the folded fabric.

Mounted upon the upper end of the shafts 70 13 are rubber pressure rollers 40 adapted to engage the cloth 22 after it leaves the compacting discs. One of the purposes of these rollers is to impart to the fabric the final creasing along the lines of the folds so that 75 the fabric will be permanently plaited. These rollers also act as feeding rollers and grip the cloth between their adjacent faces and draw it through the parts of the machine. As the cloth emerges from between 80 these rollers 40, it has formed therein a multiplicity of longitudinally disposed permanent plaits.

The upper ends of the shafts 13 are journaled in brackets 41 which brackets are secured to a bracket 42 disposed transversely 85 of the frame 10. The free ends of these brackets 41 are provided with a clamping rod 43 and a nut 44 by which the space between the rollers 40 may be regulated to 90 vary the tension exerted by these rolls on the cloth.

The method of operating my improved machine is as follows:

The motor 16 is driven from any suitable 95 source of current and through the medium of the belt 15 and pulley 14 rotates one of the shafts 13. By reason of the pinion gears 17 carried by the shafts 13, both shafts are rotated at a uniform speed but in opposite 100 directions. Cloth 22 from the supply roll is unwound by the rubber rolls 40 because of its engagement with these rotating rolls. As the cloth is unwound from the roll, it is in a flat or uncreased condition. It first 105 passes between creasing rolls 2 and 3 and has imparted to it a preliminary creasing. It then passes through the guide board A and has imparted to it a further folding because of the shape of the serpentine slot 26. The 110 folds thus imparted to the cloth are retained therein and somewhat compacted between the guide board A and the guide board B, owing to the converging sets of wires 33 and 34 stretched between guide board A and 115 guide board B. As the cloth passes through guide board B it has been made to assume a more closely confined folded condition.

After passing through the guide board B 120 the cloth is engaged by the sets of compacting discs 35 and 36 which engage the cloth with their peripheries at the lines upon which they are folded. The space between the intermeshing peripheries of the discs 35 and 36 is sufficient only to accommodate the 125 thickness of the cloth and hence the folds already imparted to the cloth are compacted to a comparatively small transverse dimension. The cloth thus folded is then drawn 130 between the rolls 40 and finally creased, the

amount of pressure of the rolls being governed by the adjustment of the clamping rod 43.

By providing the sets of wires between the 5 guide boards A and B the cloth is thereby prevented from sagging and the longitudinal tension exerted thereon by the rollers 40 is uniform throughout the warp threads of the cloth. This uniform pressure and the 10 absence of sagging of the cloth insures a uniformity of the plaits and the efficiency of the machine.

Furthermore, the distance between the 15 guide boards A and B can therefore be made sufficient so that the increase in the acuteness of the angle of the folds may not be caused too abruptly, but that these folds will be formed easily and naturally by reason of the engagement of the cloth with the converg- 20 ing supporting wires.

By reason of the hinged connections between the upper and lower sections of the 25 creasing and folding elements the threading of the cloth through the machine is facilitated, it being only necessary to swing the upper sections of the folding elements away from the lower section to enable the cloth to be passed through these elements.

Various modifications of the structure 30 illustrated may be resorted to without departing from the spirit and scope of my invention, and I particularly reserve this right.

Having thus described my invention, what I claim is:

35 1. In a cloth-plaiting machine, a pair of guide boards for preliminarily folding the cloth to be plaited, supporting wires extending from one guide board to the other and engaging the cloth along the lines of fold, 40 compacting discs engaging said cloth in the lines of fold for compacting the folds thus formed in the cloth and means for drawing the cloth through the machine and for compressing the folds of the cloth.

45 2. In a plaiting machine of the class described a pair of spaced guide boards for preliminarily folding the material to be plaited, supporting wires connecting said 50 guide boards and engaging the material to be plaited along its folds, said guide boards and wires causing the acuteness of the angle of the folds to gradually increase, revoluble compacting means engaging said material along the lines of fold for compacting the 55 folds thus formed and means for compressing said folds to form permanent plaits, said means being adapted to draw the material to be plaited through the machine.

60 3. In a plaiting machine of the class described a pair of preliminary creasing rollers, a pair of guide boards for preliminarily folding the material to be plaited, material supporting means connecting said 65 guide boards, rotary compacting means engaging the lines of fold in the material and

compacting the folds thus formed and rotary 70 compressing means for compressing the folds to form permanent plaits in the material, said creasing rollers, guide boards and compacting means being hingedly connected to facilitate the threading of the material to be plaited through the machine.

4. In a plaiting machine, rotary means for 75 preliminarily creasing the material to be plaited, a pair of spaced guide boards for imparting to the material to be plaited a preliminary fold of gradually increasing acuteness of angle, means disposed between 80 said guide boards for supporting the material to be plaited along its lines of fold, rotary intermeshing compacting discs engaging the material to be plaited at its lines of fold for compacting the folds thus formed and rotary compressing rollers for compress- 85 ing the folds to form permanent plaits in the material, said rollers also acting to draw the cloth through the machine.

5. A machine of the class described comprising a pair of guide boards, said guide 90 boards being provided with means for imparting a preliminary fold to the cloth to be plaited, converging guide wires extending from one of said guide boards to the other to gradually vary the pitch of the folds im- 95 parted to the cloth, compacting means for compacting the folds thus imparted to the cloth, a pair of adjustable rollers for drawing the cloth through the machine and for compressing the folds to form the plaits in 100 the cloth.

6. A cloth plaiting machine of the class 105 described comprising a pair of separated guide boards, said guide boards being provided with irregular passage ways for imparting preliminary folds to the cloth, the 110 passage way in one of said guide boards forming the folds in said cloth with a more acute angle, supporting wires extending along the points of fold between said guide boards, two sets of compacting discs for 115 compacting the folds thus formed in the cloth, and means for drawing the cloth through the machine and for finally compressing the folds, to form permanent plaits in the cloth.

7. A plaiting machine of the class de- 120 scribed comprising a supporting frame, a pair of freely rotatable drums for supporting a roll of cloth to be plaited, means for preliminarily creasing the cloth, a pair of spaced guide boards, each guide board being formed in two sections, the adjacent 125 edge of each section being shaped to provide an irregular slot when the sections are together, the slot formed in one of these guide boards being composed of acute angles while the slot of the other guide board is formed of obtuse angles, the slots in said 130 guide boards causing the cloth to be preliminarily folded, the folds increasing in pitch

between the two guide boards, supporting wires extending from one guide board to the other and along the lines of fold, two sets of intermeshing compacting discs for compacting the folds thus formed in the cloth, a pair of constantly driven rubber rollers, means for adjusting said rolls, said rollers being adapted to draw the cloth through the machine and to compress the folds of the cloth.

8. A plaiting machine of the class described comprising a frame provided with a base, a motor mounted on said base, a pair of vertically disposed intermeshing shafts at one end of said frame, one end of each shaft projecting above said frame, means operatively connecting one of said shafts to said motor, a pair of freely rotatable drums for supporting a roll of cloth to be plaited, a pair of preliminary creasing rolls, said rolls being provided with cooperating V-shaped projections and grooves, a pair of

spaced guide boards, each guide board being formed in two sections, the adjacent edge of each section being shaped to provide an irregular slot when the sections are together, the slot formed in one of these guide boards being composed of acute angles while the slot of the other guide board is formed of obtuse angles, the slots in said guide boards causing the cloth to be preliminarily folded, the folds increasing in pitch between the two guide boards, supporting wires extending from one guide board to the other and along the lines of fold, two sets of intermeshing compacting discs for compacting the folds thus formed in the cloth, a pair of rubber rollers mounted on said vertically disposed shafts, said rollers being adapted to draw the cloth through the machine and for compressing the folds of said cloth to form permanent plaits therein.

HENRY E. ELROD.